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04/26/2005

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## CHRISTENSON OIL CSM Site Summary

### CHRISTENSON OIL

Oregon DEQ ECSI #: 2426

3821 NW St. Helens Road

DEQ Site Mgr: Thomas Gainer

Latitude: 45.5494°

Longitude: -122.7268°

Township/Range/Section: 1N/1E/19

River Mile: 8.7 East bank

LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☐ Hardcopies only

#### 1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Christenson Oil site to the river is summarized in this section and Table 1, and supported in following sections.

##### 1.1. *Overland Transport*

Overland transport is not considered a pathway of concern for the Christenson Oil facility, as it is located 0.7 mile from the Willamette River.

##### 1.2. *Riverbank Erosion*

Not applicable.

##### 1.3. *Groundwater*

There are no data to evaluate the groundwater pathway. However, petroleum hydrocarbons have not been detected in groundwater samples collected in the southern portion of the Equilon Bulk Terminal property that is located immediately adjacent and likely downgradient of the Christenson Oil property (GSI 2003).

##### 1.4. *Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)*

There are no overwater activities at this site. Runoff from the Christenson Oil property flows through storm sewers that ultimately discharge to the Willamette River at City Outfalls 18 or 19. Stormwater testing in the 1990s indicted exceedances of permit standards and aquatic water quality criteria (see Section 10 below).

In 1975, 1,000 gallons of petroleum was released to the unnamed creek that discharges through Outfall 18, which may have contributed to Willamette River sediment contamination (DEQ 2000) (see Sections 7 and 8.3 below).

##### 1.5. *Relationship of Upland Sources to River Sediments*

See Final CSM Update.

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### 1.6. Sediment Transport

Not applicable.

## 2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: April 26, 2005

## 3. PROJECT STATUS

Activity		Date(s)/Comments
PA/XPA	<input checked="" type="checkbox"/>	PA (Wohlers Environmental 2000)
RI	<input type="checkbox"/>	
FS	<input type="checkbox"/>	
Interim Action/Source Control	<input type="checkbox"/>	
ROD	<input type="checkbox"/>	
RD/RA	<input type="checkbox"/>	
NFA	<input type="checkbox"/>	

DEQ Portland Harbor Site Ranking (Tier 1, 2, 3, or Not ranked): Tier 3

## 4. SITE OWNER HISTORY

Owner/Occupant	Type of Operation	Years
HAJ, Inc. (dba Christenson Oil) (owner)	Petroleum/lubricant storage, blending, and distribution	mid-1940s (?) to present
Amphitheatre, Inc. Portland Drive-In Theatre, Inc. (lessee)	Offices	1950 – early 1960s
Unknown	Residential/small commercial	1936 – mid-1940s

## 5. PROPERTY DESCRIPTION

The Christenson Oil site is located on the southern shore of the Willamette River at approximately RM 8.7. This 2-acre site is approximately 0.7 mile from the river. The property is located in an industrial area, but is adjacent to the City's 5,000-acre Forest Park and is at the base of the undeveloped West Hills.

The western portion of the property slopes steeply from west to east, and the eastern portion of the property slopes slightly from west to east. The elevation of the site ranges from 100 feet mean sea level (msl) on the western perimeter to approximately 50 feet msl on the eastern portion of the site. An intermittent, unnamed stream bisects these two portions of the property. This creek previously flowed beneath the main onsite structure but was re-routed to its current location in the late 1970s or early 1980s (Wohlers Environmental 2000).

There are two outdoor aboveground storage tank farms (14 ASTs) and three indoor tank farms (32 ASTs) located in the East Plant portion of the site. Lubricating oils and specialty oils are stored, blended and packaged at the facility. Four of the tank farms are used for bulk storage (total capacity 290,400 gallons). The fifth tank farm is used for product mixing and blending (total capacity 23,000 gallons) (DEQ 2000).

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ASTs are enclosed in concrete or dirt containment structures. Warehouses, offices, loading/unloading facilities, and storage areas are located in the West Plant portion. With the exception of the steeply sloping western portion of the site, accessible areas of the site are paved or occupied by buildings (Wohlers Environmental 2000).

## **6. CURRENT SITE USE**

Christenson Oil is a bulk petroleum facility that stores, blends, and distributes lubricating and specialty oils. Currently, it also handles small quantities of cresols, isobutanol, and phenolic and zinc-containing lubricant additives. It is not a RCRA hazardous waste generator (DEQ 2003). Christenson Oil developed a Stormwater Pollution Control Plan in 1996 and has implemented several best management practices to reduce concentrations of contaminants in their stormwater runoff (DEQ 2004).

## **7. SITE USE HISTORY**

Christenson Oil has occupied the property since at least 1952, and may have had petroleum storage facilities at the site as early as the 1940s. The oldest structure at the site appears to have been constructed in 1947 (DEQ 2000).

Three spills have occurred on this property since 1975, two of which are described further here. In October 1975, approximately 1,000 gallons of oil was spilled at night inside the mixing building and was not discovered until the next morning (Wohlers Environmental 2000). Oil flowed from the mixing building floor to the plant's storm sewer system, which directed the release to the unnamed creek that flows to the Willamette River at Outfall 18. Christenson Oil stated that the oil was contained within the creek and due to the viscosity of the material, it did not reach the river (Wohlers Environmental 2000). DEQ (2000) noted the absence of records documenting whether surface water or sediments within the creek were cleaned up or if any potential contaminated soils onsite were remediated.

In September 1998, about 715 gallons of bar and chain oil (aka "flush oil") overflowed from an AST during a tank trailer delivery. The oil was contained within the secondary containment structures and absorbent pads were used to soak up the oil (DEQ 2000).

Three underground storage tanks (USTs) were removed from the site by 1990. These tanks included a 10,000-gallon Stoddard solvent tank, 10,000-gallon kerosene tank, and a 10,000-gallon diesel tank. The Stoddard solvent and kerosene tanks were in good condition and are currently in use as ASTs in the tank farm. Confirmation sampling indicated that no kerosene, diesel, or mineral spirit constituents were detected in soils samples from all three removal activities (Wohlers Environmental 2000).

## **8. CURRENT AND HISTORIC SOURCES AND COPCS**

The understanding of historic and current potential upland and overwater sources at the site is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion.

### **8.1. Uplands**

Three spills have occurred on this site since 1975 (DEQ 2000). Christenson Oil claims that the 1975 1,000-gallon oil spill was contained in the creek and did not reach the river, although DEQ has no records to indicate that the company sampled surface water or sediment within the creek or conducted any cleanup of soils on the site or sediment within the creek (DEQ 2004). Soil, sediment, and/or surface water sampling was also not performed for the 1995 spill.

Hazardous substances commonly associated with products produced by Christenson Oil include PAHs, BTEX, and metals. Minor surface soil contamination associated with piping drips has been

noted on the site by DEQ (2004). Petroleum products, such as mineral spirits, diesel fuel, and heavier oils, have been detected in subsurface soils at the site in the vicinity of the UST removals. According to DEQ (2000), stormwater runoff has contained low concentrations of benzo(a)anthracene, benzo(a)pyrene, PAHs, and metals, which may suggest that these contaminants are present in site soils at higher concentrations.

## 8.2. Overwater Activities

☐ Yes ☒ No

The Christenson Oil property is not located adjacent to the river.

## 8.3. Spills

Known or documented spills at the Christenson Oil site were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports, or from DEQ correspondence. These spills are summarized below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
9/98	Lubricating oil	715	Earthen containment	Yes
11/95	Hydraulic oil	30-50	Asphalt	Yes
10/75	175 Bright Stock oil	1,000	Asphalt, then into the storm sewer, which directed it to an unnamed creek	Yes, the following morning

## 9. PHYSICAL SITE SETTING

### 9.1. Geology

Available files indicate that no geologic or hydrogeologic data have been collected at the site.

### 9.2. Hydrogeology

Available files indicate that no geologic or hydrogeologic data have been collected at the site.

## 10. NATURE AND EXTENT (Current Understanding)

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. When no data exist for a specific medium, a notation is made.

### 10.1. Soil

#### 10.1.1. Upland Soil Investigations

☒ Yes ☐ No

Wohlers Environmental (2001, pers. comm.) sampled soils in the vicinity of the 1998 flush oil spill, and the results showed concentrations below DEQ's Risk-based Decision Making (PBDM) target cleanup levels for the most stringent applicable exposure pathways. Large rocks and cobbles limited the depth of the investigation at all sampling locations. Minimum and maximum results from this investigation are provided below. Sample depths ranged from

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1 to 4 feet bgs.

Analyte	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)
<b>Total Petroleum Hydrocarbons (TPH)</b>		
TPH-D	ND	4,590
TPH-O	1,970	118,000
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>		
Phenanthrene	0.16	2.08
Anthracene	0.09	0.59
Fluoranthene	0.09	0.13
Pyrene	0.11	0.45
Total xylenes	ND	1.36

*mg/kg = milligrams per kilogram (ppm)*

Three underground storage tanks were removed by 1990. Stockpiled soils from the excavation contained detectable concentrations of Stoddard solvent, diesel fuel, and oil. Soils were treated onsite by rototill-assisted aeration from 1991 to 1993 and supposedly spread over the western portion of the property in 1993 after analytical results confirmed that hydrocarbon constituents were not detected. A NFA for the UST decommissioning was issued in November 2000 (DEQ 2000). Soil samples collected in 2001 during the preliminary assessment showed near-surface petroleum contamination in the area of the 1998 release of flush oil, but DEQ believes that the contamination is associated with piping drips and not the 1998 release (DEQ 2004).

**10.1.2. Riverbank Samples**☐ Yes ☒ No

The site is not located adjacent to the river.

**10.1.3. Summary**

The extent, if any, of surface and subsurface soil contamination on the Christenson Oil site is unknown. Soil sampling performed by Wohlers Environmental (2001, pers. comm.) in the vicinity of the 1998 flush oil spill found COPCs either undetected or below DEQ RBDM target cleanup levels for the most stringent exposure pathways.

**10.2. Groundwater****10.2.1. Groundwater Investigations**☐ Yes ☒ No

No groundwater investigations for the site are on file with DEQ.

**10.2.2. NAPL (Historic & Current)**☐ Yes ☒ No

No data are available.

**10.2.3. Dissolved Contaminant Plumes**☐ Yes ☒ No

No groundwater data are available. However, petroleum hydrocarbons have not been detected in groundwater samples collected in the southern portion of the Equilon Bulk Terminal property that is located immediately adjacent and likely downgradient of the Christenson Oil property (GSI 2003).

**Plume Characterization Status** ☐ Complete ☐ Incomplete

Not Applicable (N/A). No geologic or hydrogeologic data have been collected at the site.

**Plume Extent**

N/A. No geologic or hydrogeologic data have been collected at the site.

**Min/Max Detections (Current situation)**

N/A. No geologic or hydrogeologic data have been collected at the site.

**Current Plume Data**

N/A. No geologic or hydrogeologic data have been collected at the site.

**Preferential Pathways**

No information has been presented regarding the depths of the utilities at the facility relative to the shallow groundwater table, or if the utility and associated backfill may be a preferential pathway at the site.

**Downgradient Plume Monitoring Points (min/max detections)**

N/A. No geologic or hydrogeologic data have been collected at the site.

**Visual Seep Sample Data**

☐ Yes ☒ No

This site is not adjacent to the river, so seeps along the river cannot be directly related to the Christenson Oil site.

**Nearshore Porewater Data**

The site is not located adjacent to the river.

**Groundwater Plume Temporal Trend**

No hydrogeologic data have been collected at the site.

**10.2.4. Summary**

No groundwater data are available. Petroleum hydrocarbons have not been detected in groundwater samples collected in the southern portion of the Equilon Bulk Terminal property that is located immediately adjacent and likely downgradient of the Christenson Oil property (GSI 2003).

**10.3. Surface Water**

**10.3.1. Surface Water Investigation**

☒ Yes ☐ No

NPDES-permitted stormwater runoff from the East Plant flows toward catch basins in the southeast corner of the site, where the runoff is conveyed to the City storm drain system that discharges at Outfall 18. Runoff from the West Plant is conveyed to catch basins along NW St. Helen's Road, which are owned and maintained by the City of Portland. These catch basins route stormwater in a northeastern direction to Outfall 19, located west of Outfall 18. Runoff, at times, may also flow to the unnamed creek, which also discharges to the river at City Outfall 18. Stormwater flow for the site and vicinity is illustrated in Supplemental Figure 3 from Wohlers Environmental (2000).

**10.3.2. General or Individual Stormwater Permit [Current or Past]**

☒ Yes ☐ No

Permit Type	File Number	Start Date	Outfalls	Parameters/Frequency
GEN12Z	108730	1996	City Outfall #18	Standard <sup>1</sup> twice yearly

<sup>1</sup> Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, and zinc. *E. coli* may also be required.

**Do other non-stormwater wastes discharge to the system?** ☐ Yes ☐ No

Unknown

**10.3.3. Stormwater Data** ☒ Yes ☐ No

According to DEQ, semi-annual stormwater analyses conducted by DEQ and BES between November 1996 and November 1999 indicated that site runoff was commonly contaminated with petroleum and metals. Oil and grease concentrations exceeded the site stormwater permit limits, as well as lead and mercury. Four out of seven samples contained copper and/or zinc at concentrations that exceeded freshwater acute aquatic toxicity concentrations (DEQ 2000). However, analysis of a stormwater sample collected in May 2002 at the onsite catch basin adjacent to the loading dock area showed results well below applicable benchmarks in the NPDES permit. This reduction is attributable to the adoption of best management practices (BMPs) at the facility. Additional proposed BMPs will likely further reduce stormwater contaminant concentrations (Wohlers Environmental 2002, pers. comm.).

**10.3.4. Catch Basin Solids Data** ☒ Yes ☐ No

Wohlers Environmental (2001) collected stormwater and catch basin sediment data at the Christenson Oil facility in November 2001. Analytical results for the catch basin sediment sample showed detected concentrations of acenaphthene (6.87 µg/kg), fluoranthene (295 µg/kg), and naphthalene (29 µg/kg). Wohlers collected an additional stormwater sample during at storm event in May 2002. With the exception of copper (0.0356 mg/L) and zinc (0.312 mg/L), all results were below applicable NPDES benchmarks and DEQ Level II Screening Level Values (Wohlers Environmental 2002, pers. comm.)

**10.3.5. Wastewater Permit** ☐ Yes ☒ No

**10.3.6. Wastewater Data** ☐ Yes ☒ No

**10.3.7. Summary**

Runoff from the Christenson Oil property flows through storm sewers that ultimately discharge to the Willamette River at City Outfall 18 or Outfall 19. In 1975, petroleum was released to the unnamed creek that discharges through Outfall 18; it is unknown if this spill contributed to Willamette River sediment contamination (DEQ 2000). Prior to the adoption of BMPs, site runoff was commonly contaminated with petroleum and metals. Four out of seven samples contained copper and/or zinc at concentrations that exceeded freshwater acute aquatic toxicity concentrations (DEQ 2000). Catch basin sediment samples collected by Wohlers Environmental in 2001 showed detectable concentrations of PAHs. Since BMPs have been implemented at the facility, stormwater sample collected in May 2002 at the onsite catch basin adjacent to the loading dock area showed results well below applicable benchmarks in the NPDES permit.

**10.4. Sediment**

**10.4.1. River Sediment Data**

☐ Yes ☒ No

**10.4.2. Summary**

The Christenson Oil site is landlocked and located 0.7 mile from the Willamette River. As described above, the facility contributes stormwater to City of Portland Outfall 18 and possibly Outfall 19.

**11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES**

**11.1. Soil Cleanup/Source Control**

Christenson developed a Stormwater Pollution Control Plan in 1996 and has implemented BMPs, including surface sweeping, catch basin cleaning, use of drip pans, improved solids filtration at the catch basin, and monitoring of vehicles. These BMPs have significantly reduced contaminant concentrations in stormwater runoff from the Christenson Oil facility (DEQ 2004, Wohlers Environmental 2002, pers. comm.). Additional long-term BMPs, including installation of an oil/water separator, and re-asphalting the loading dock area, were proposed for completion in 2002 (Wohlers Environmental 2002, pers. comm.).

Three underground storage tanks were removed in 1989-1990.

**11.2. Groundwater Cleanup/Source Control**

None.

**11.3. Other**

None.

**11.4. Potential for Recontamination from Upland Sources**

See Final CSM Update.

**12. BIBLIOGRAPHY / INFORMATION SOURCES**

**References cited:**

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Wohlers Environmental. 2001. Personal communication (transmittal letter of 9/13/01 to T. Gainer, DEQ, containing soil sampling results associated with September 1998 flush oil spill). Wohlers Environmental Services, Inc., Tigard, OR.

Wohlers Environmental. 2002. Personal Communication (transmittal letter of 8/2/02 to T. Gainer, DEQ, containing stormwater analytical results for Christenson Oil). Wohlers Environmental Services, Inc., Tigard, OR.

**Figures:**

Figure 1. Site Features

**Tables:**

Table 1. Potential Sources and Transport Pathways Assessment

**Supplemental Figures:**

Figure 3. Area Stormwater Flow Map (Wohlers Environmental 2000)

## **FIGURES**

Figure 1. Site Features



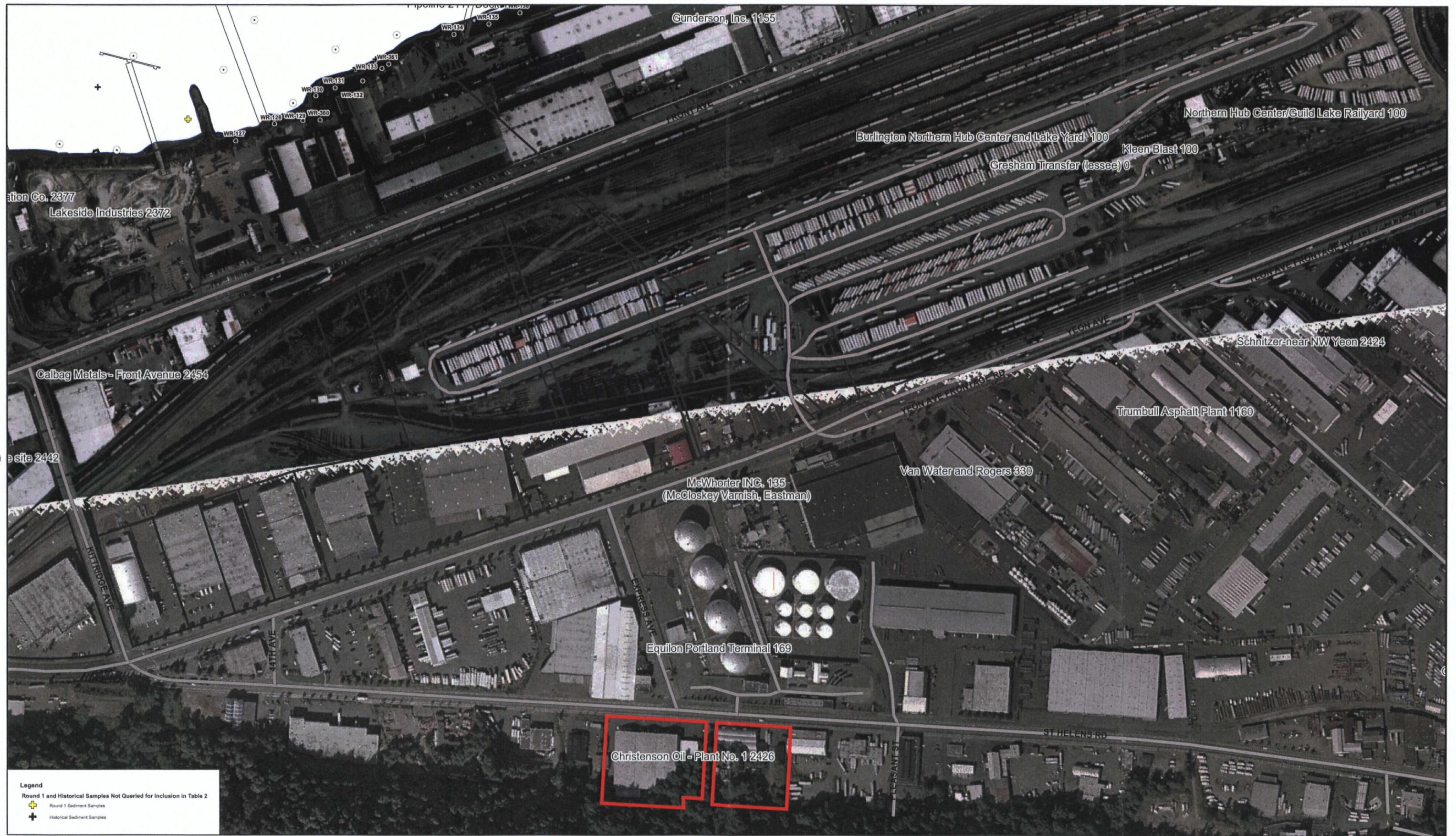


Figure 1-Site Features  
 Portland Harbor RI/FS  
 Conceptual Site Model  
 Christenson Oil  
 ECSI 2426



## **TABLES**

Table 1. Potential Sources and Transport Pathways Assessment



### Christenson Oil #2426

**Table 1. Potential Sources and Transport Pathways Assessment**

[illegible]

**Notes:**

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

UST	Underground storage tank
AST	Above-ground storage tank
TPH	Total petroleum hydrocarbons
VOCs	Volatile organic compounds
SVOCs	Semivolatile organic compounds
PAHs	Polycyclic aromatic hydrocarbons
BTEX	Benzene, toluene, ethylbenzene, and xylenes
PCBs	Polychlorinated biphenols

## **SUPPLEMENTAL FIGURES**

Figure 3. Area Stormwater Flow Map (Wohlers Environmental 2000)

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and tribal partners, and is subject to change in whole or part.

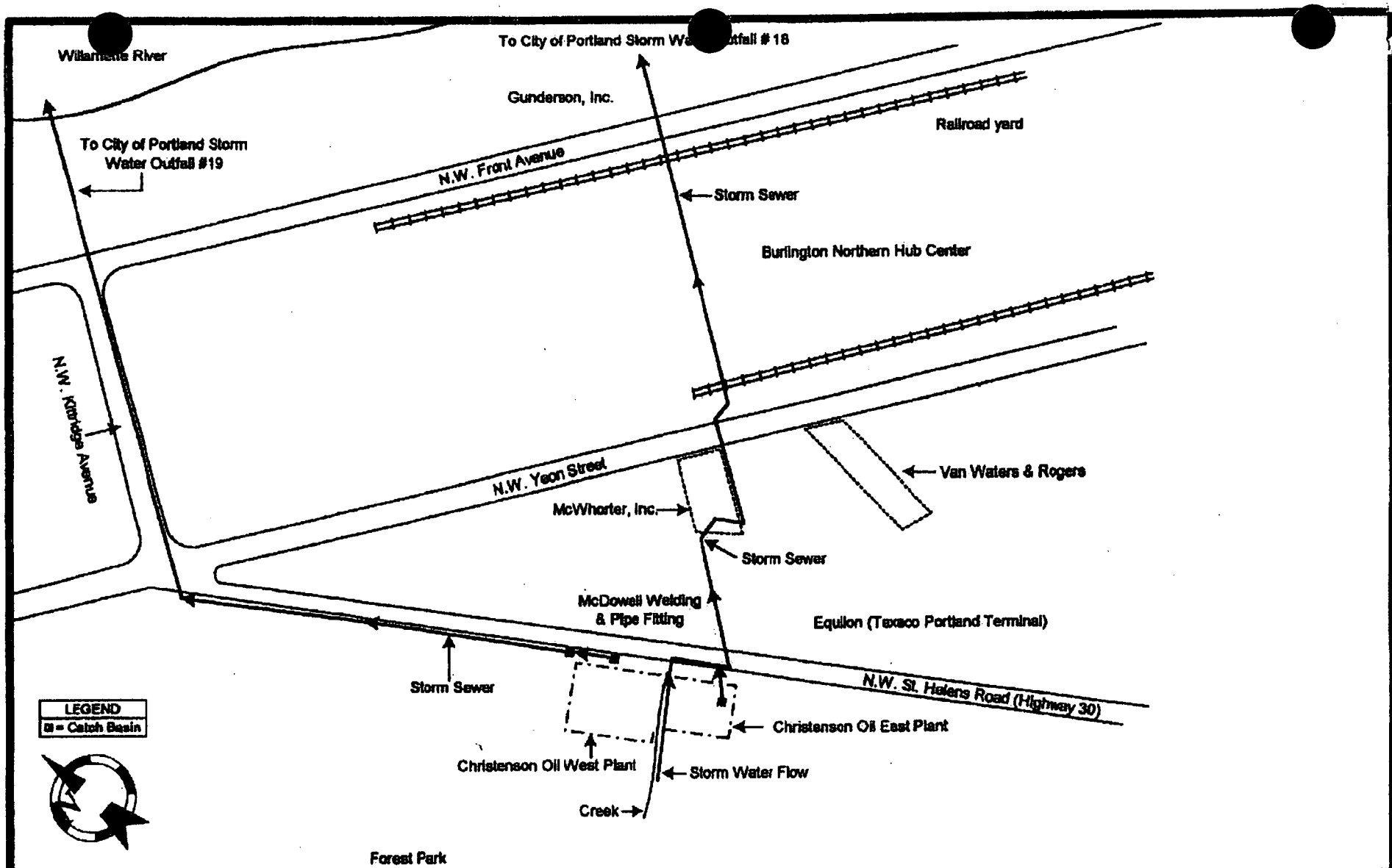


FIGURE 3

## AREA STORM WATER FLOW MAP

CHRISTENSON OIL COMPANY  
3821-3885 N.W. ST. HELENS ROAD  
PORTLAND, OREGON



PROJECT NO.:	00-0120
DATE:	09/22/00
SCALE:	Not to scale
FILE:	FG3000120
DRAWN BY:	MM